

## ABSTRACT:

Compositions and methods for stabilizing rare cells in blood specimens, preserving the quality of blood specimens, and also serving as cell fixatives are disclosed which minimize losses of target cells (for example, circulating tumor cells) and formation of debris and aggregates from target cells, non-target cells and plasma components, thereby allowing more accurate analysis and classification of circulating tumor cells (CTC) and, ultimately, of tumor burdens in cancer patients. Stabilization of specimens is particularly desirable in protocols requiring rare cell enrichment from blood specimens drawn from cancer patients. Exposure of such specimens to potentially stressful conditions encountered, for example, in normal processing, mixing, shaking, delays due to transporting the blood, has been observed to not only diminish the number of CTC but also to generate debris and aggregates in the blood specimens that were found to interfere with accurate enumeration of target cells, if present. Stabilizers are necessary to discriminate between *in vivo* CTC disintegration and *in vitro* sample degradation.